

Fig. 1A - Vertical sound line

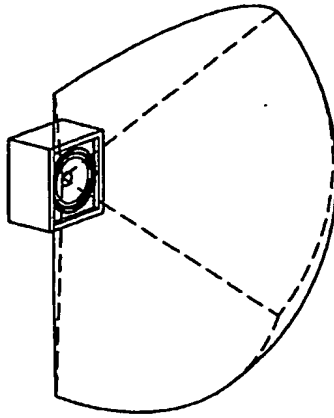


Fig. 1B - Spherical sound line

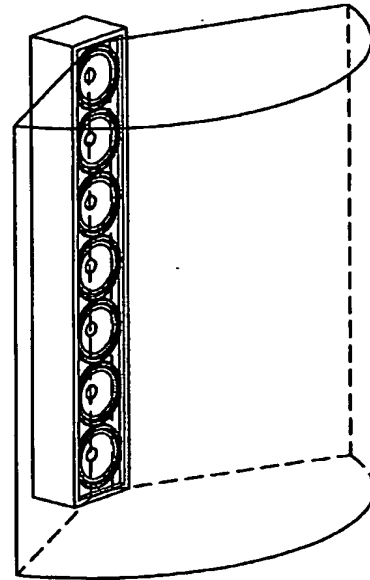


Fig. 1C - Cylindrical sound line

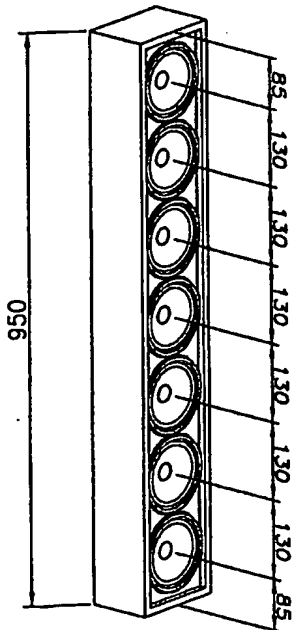


Fig. 2A - Dimensional example of vertical sound line

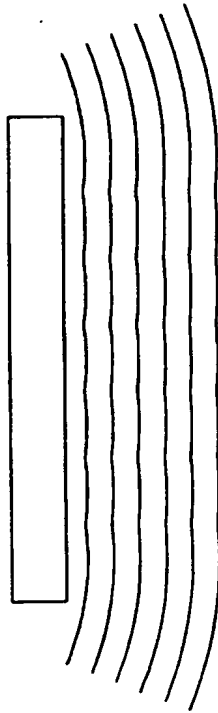


Fig. 2B - 1000 Hz

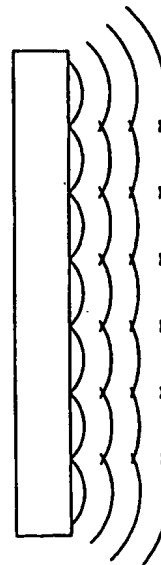


Fig. 2C - 2000 Hz

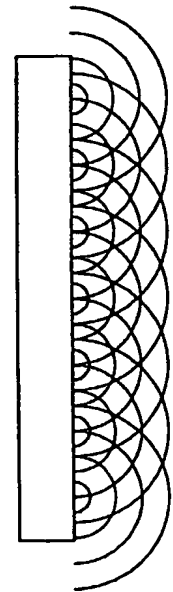


Fig. 2D - Over 2000 Hz

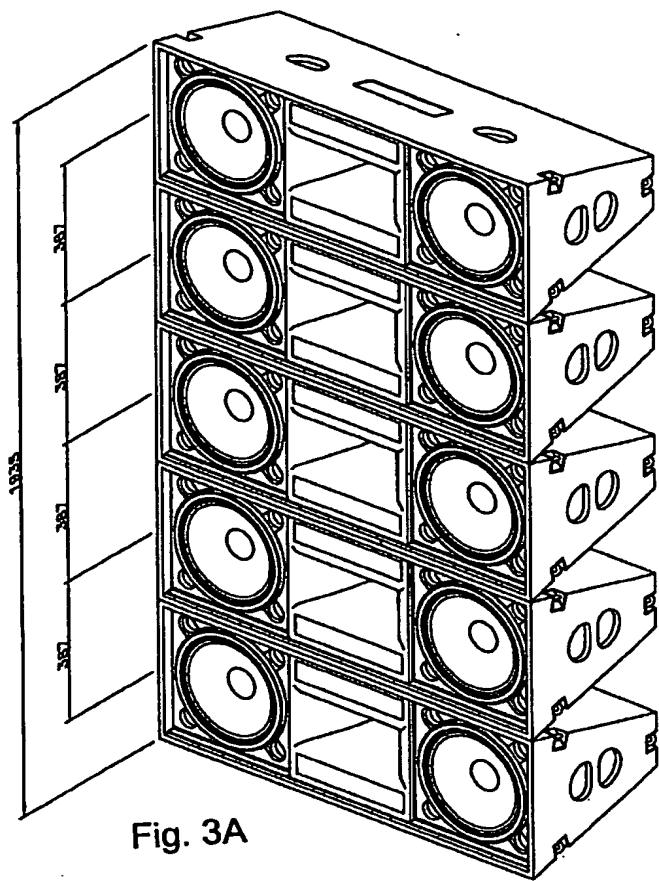


Fig. 3A

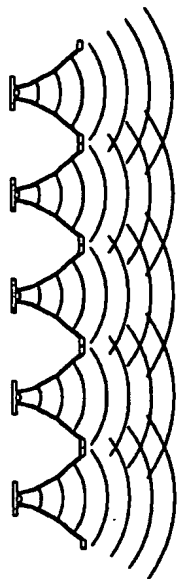


Fig. 3B

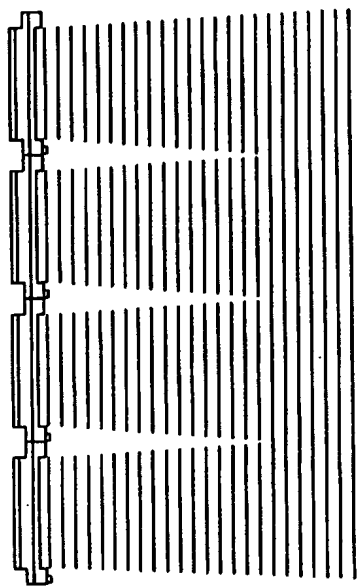


Fig. 4A

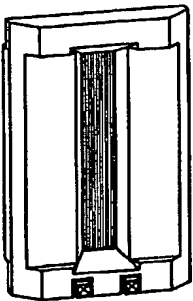


Fig. 4B

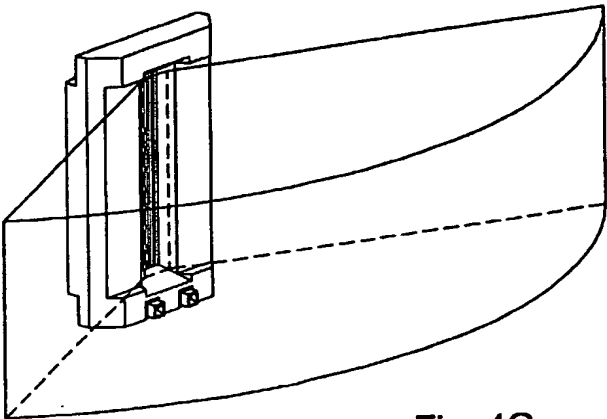


Fig. 4C

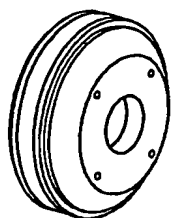


Fig. 5A

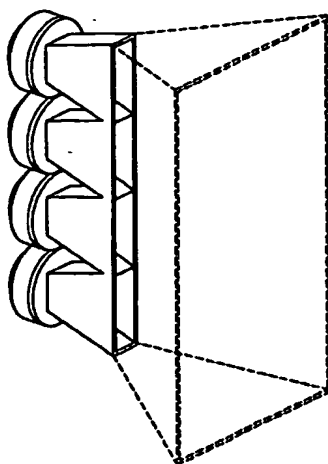


Fig. 5B

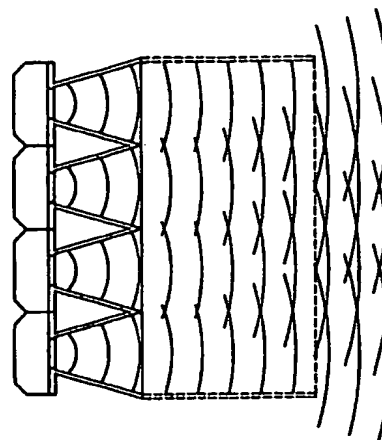


Fig. 5C

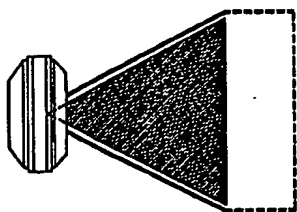


Fig. 6A -Horizontal  
cross section

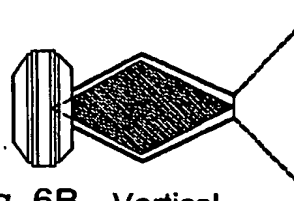


Fig. 6B - Vertical  
cross section

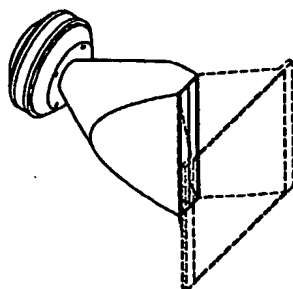


Fig. 6C

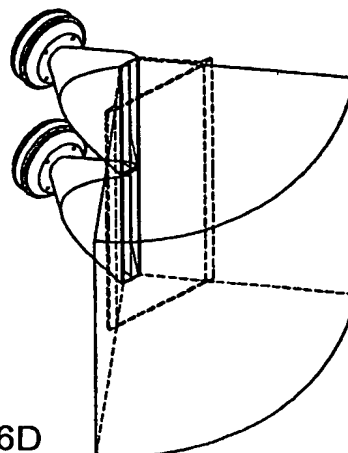


Fig. 6D

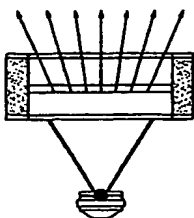


Fig. 7A - Reflection pattern on a flat surface - from above and cross section

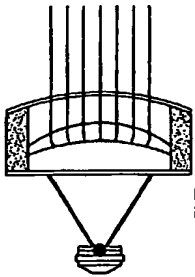


Fig. 7B - Reflection pattern on a parabolic surface before the first throat plane - from above and cross section

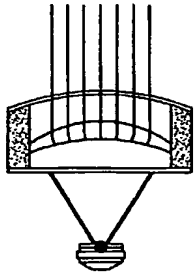


Fig. 7C - Reflection pattern on a parabolic surface after the second throat plane - from above and cross section

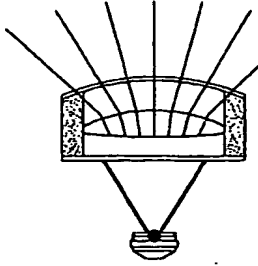


Fig. 7D - Reflection pattern on a hyperbolic surface - from above and cross section

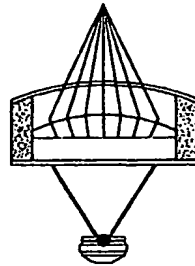


Fig. 7E - Reflection pattern on an elliptical surface - from above and cross section

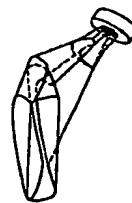


Fig. 8A - Wave guide pattern with real (above) and theoretical (below) parabolic reflection surface

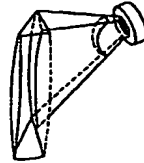


Fig. 8B - Wave guide pattern with real (above) and theoretical (below) hyperbolic reflection surface

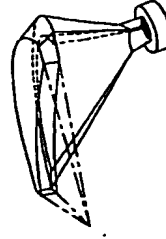
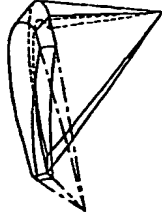
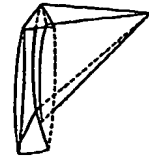


Fig. 8C - Wave guide pattern with real (above) and theoretical (below) elliptical reflection surface



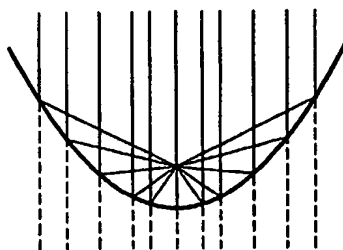


Fig. 9A1 - Parabola section

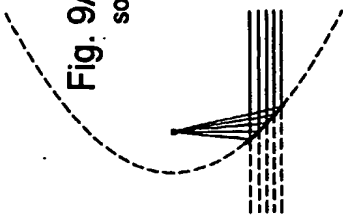


Fig. 9A2 - Effect of a point source on a segment

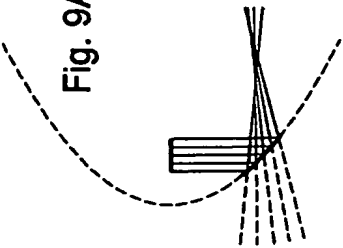


Fig. 9A3 - Effect of a real source on a segment

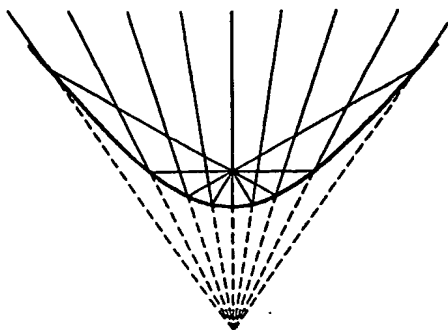


Fig. 9B1 - Hiperbola section

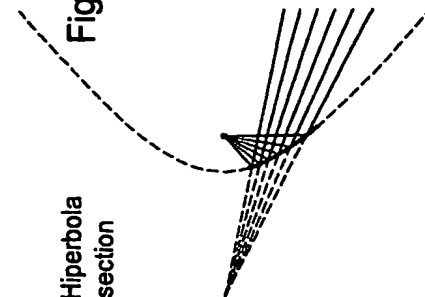


Fig. 9B2 - Effect of a point source on a segment

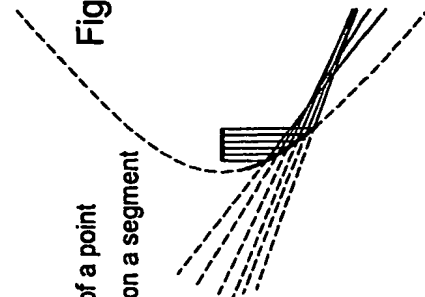


Fig. 9B3 - Effect of a real source on a segment

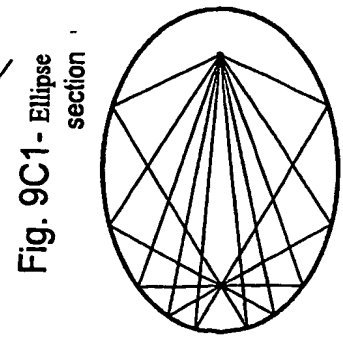


Fig. 9C1 - Ellipse section

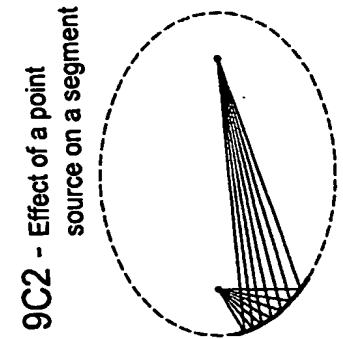


Fig. 9C2 - Effect of a point source on a segment

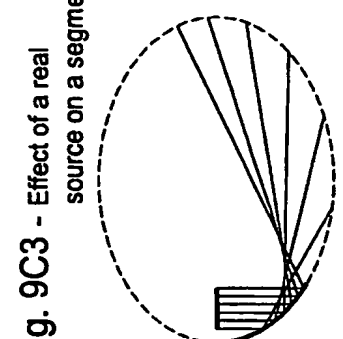
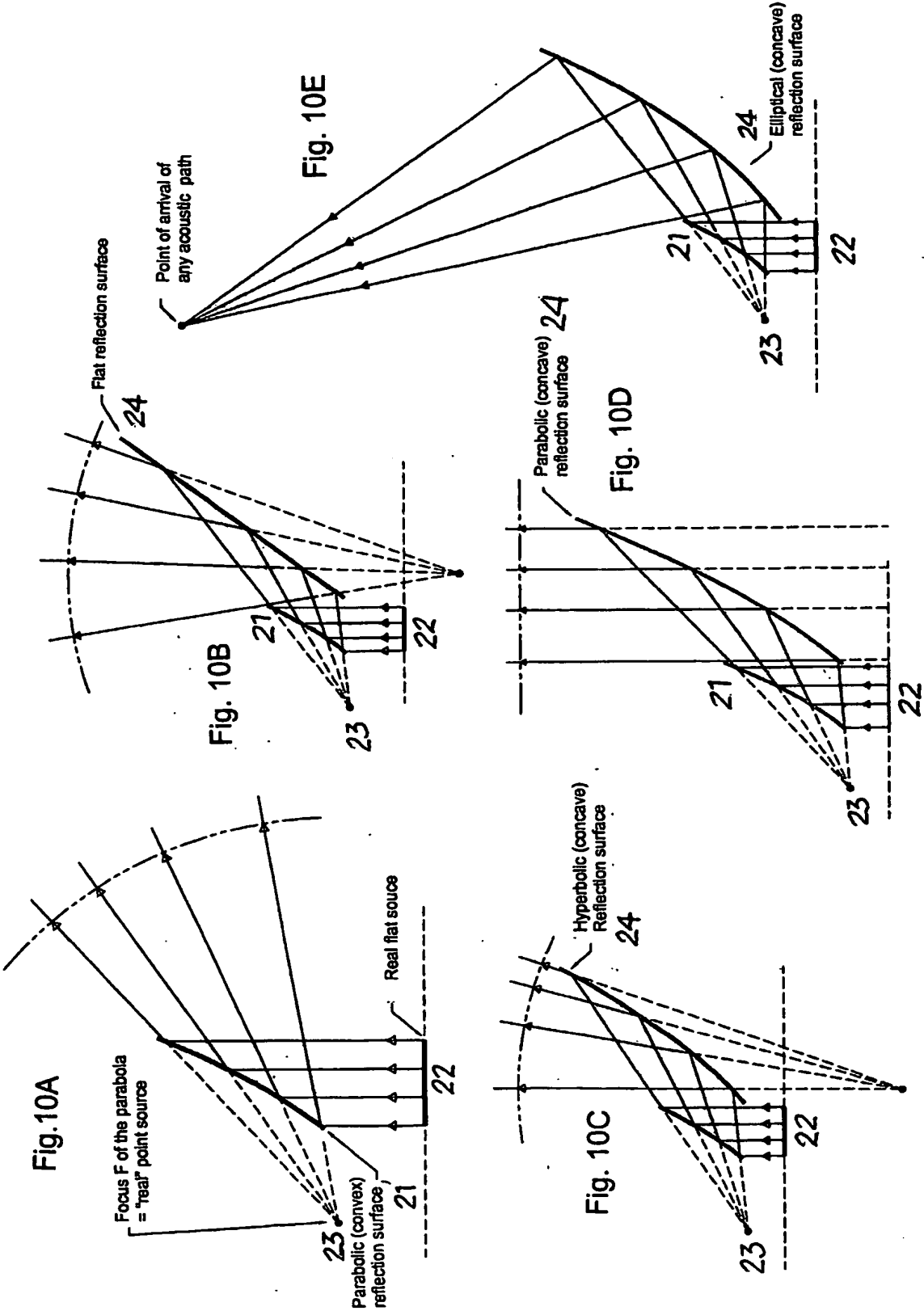


Fig. 9C3 - Effect of a real source on a segment



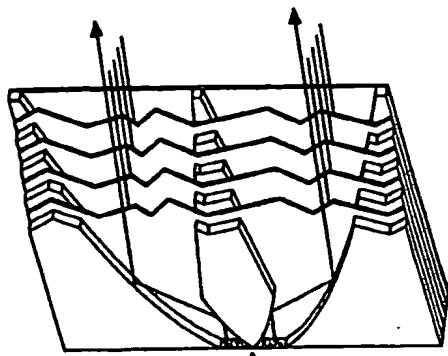


Fig. 11C

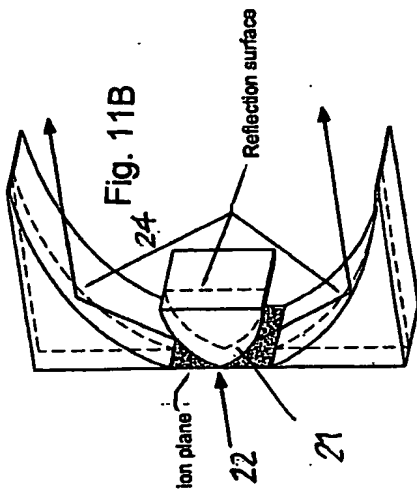


Fig. 11B

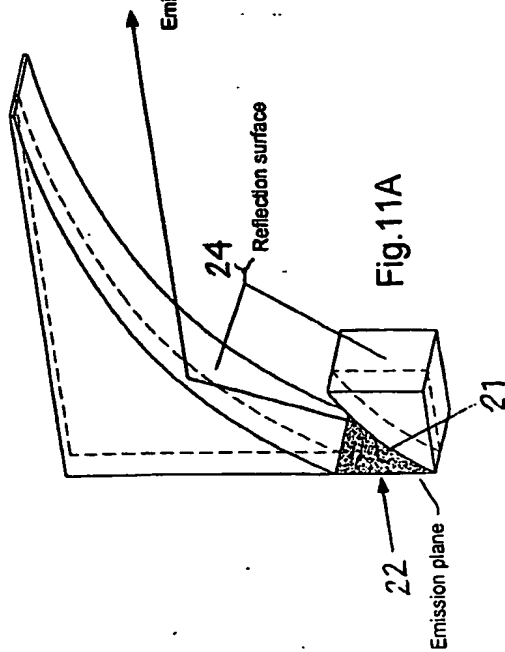


Fig. 11A

Partition for eliminating  
inside reflections

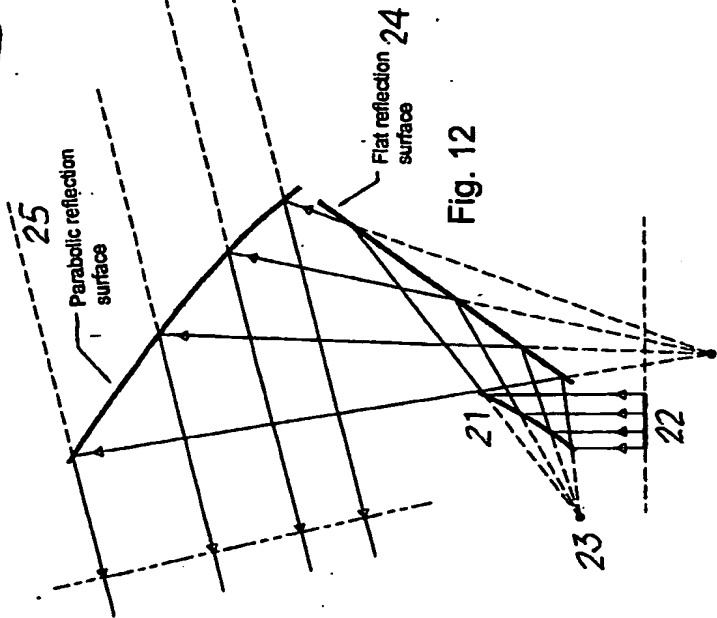


Fig. 12

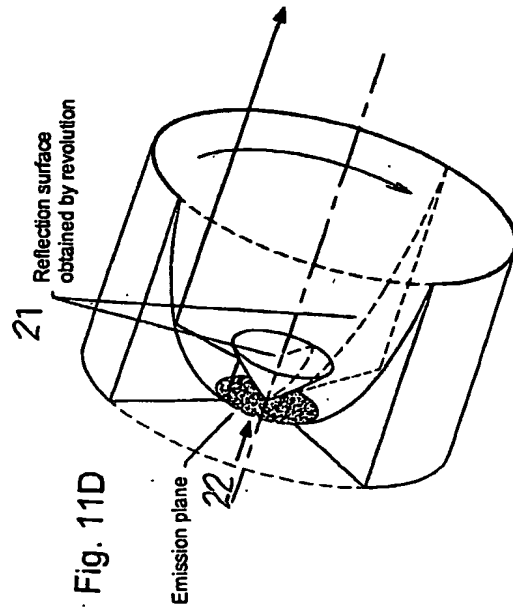


Fig. 11D

21 Reflection surface  
obtained by revolution

Emission plane  
22

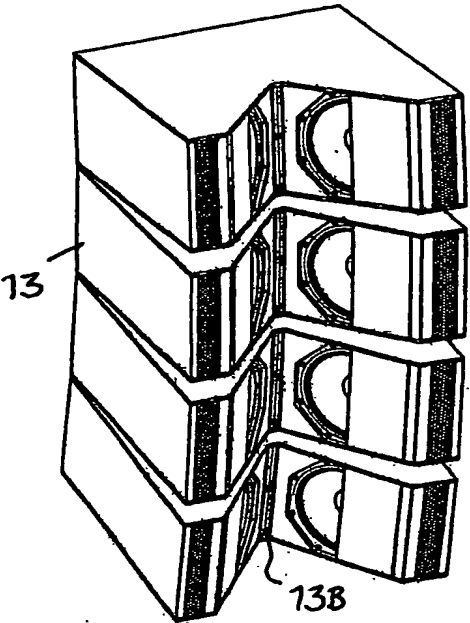
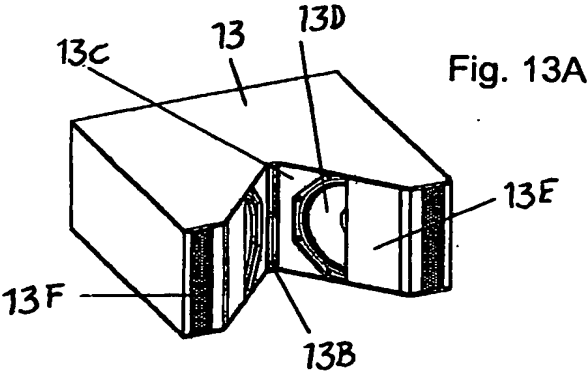


Fig. 14B

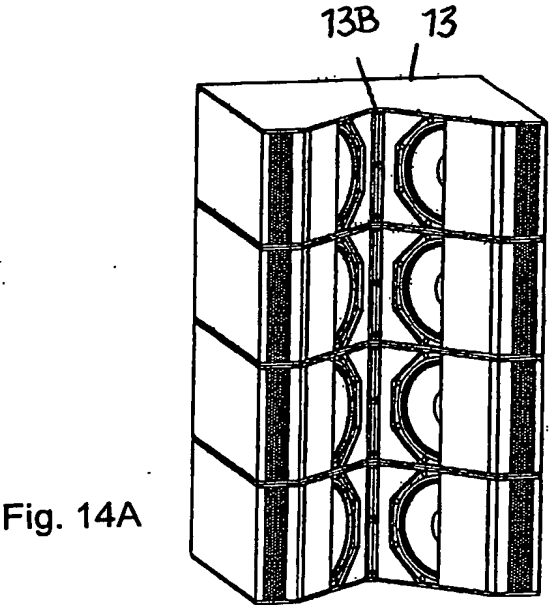
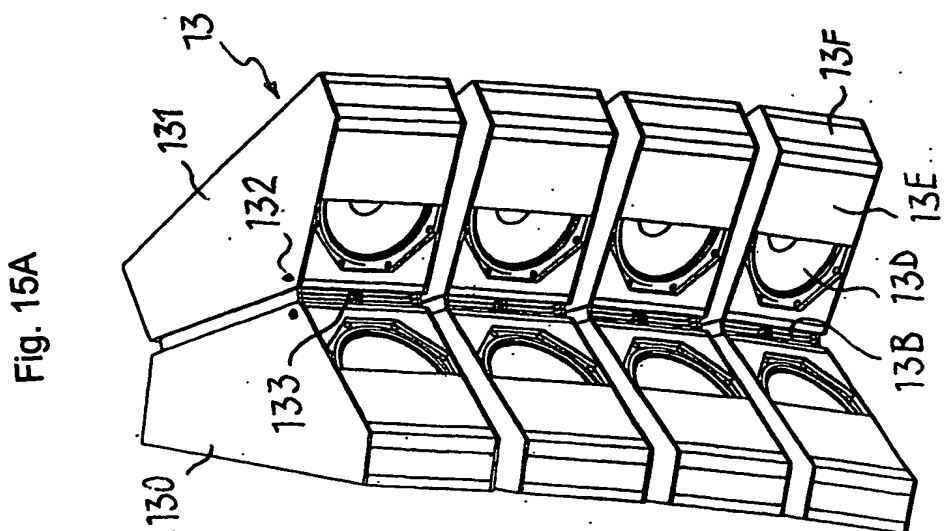
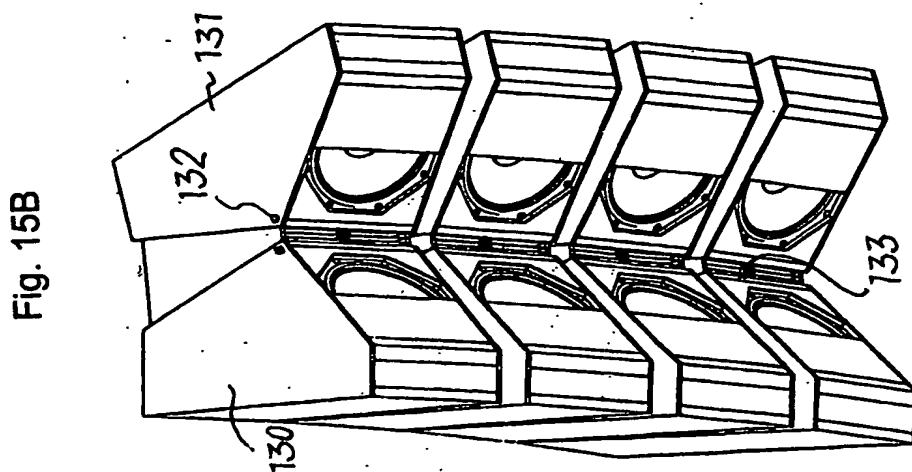
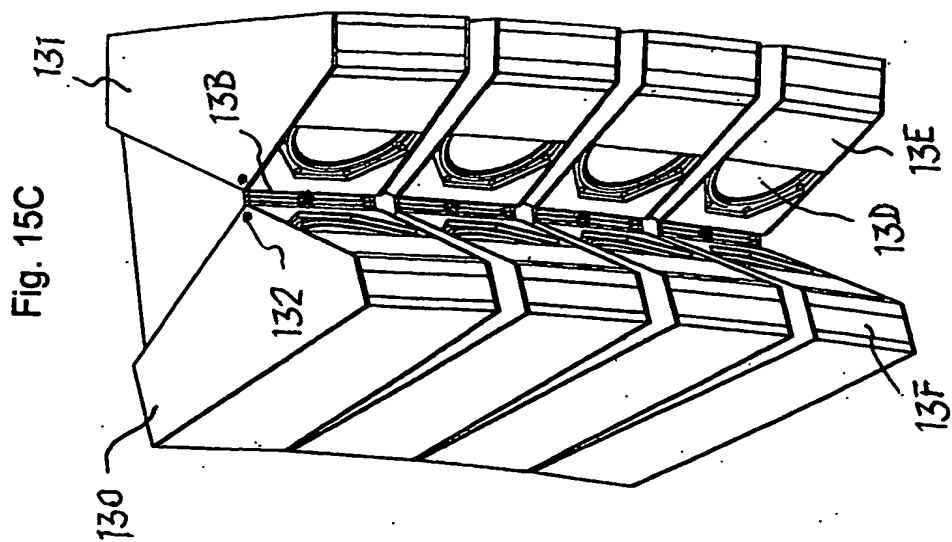


Fig. 14A





# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/IT 03/00123

**A. CLASSIFICATION OF SUBJECT MATTER**  
IPC 7 H04R1/32 G10K11/20

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
IPC 7 H04R G10K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)  
EPO-Internal, WPI Data

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5 847 331 A (HART TERESA ET AL) 8 December 1998 (1998-12-08) column 1, line 1 - line 15 column 2, line 10 - line 37 abstract ---	1-22
A	US 4 357 490 A (DICKEY BARON C) 2 November 1982 (1982-11-02) column 3, line 31 - column 4, line 24 abstract -----	1-22

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

### \* Special categories of cited documents :

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"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

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Date of the actual completion of the international search

7 July 2003

Date of mailing of the international search report

25.07.2003

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RALF BOSTRÖM/JA A

# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/IT 03/00123

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 5847331	A	08-12-1998	NONE	
US 4357490	A	02-11-1982	NONE	